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ABSTRACT

According to the medical research community that attempts to define the scope of fraud, biomedical fraud includes such phenomena as salami science, which is the practice of dividing a project into a number of brief publications, called least publishable units; autoplagiarism, the practice of writing up the same study in a variety of forms and submitting each; and unjustified authorship, the practice of adding names to the manuscript as "favors." Even sloppy recordkeeping contributes to biomedical fraud. This paper tries to uncover why biomedical fraud has proliferated. Sociological theories about the scientific method developed by Merton, Kuhn, and social constructivists are discussed. The origins of fraud as explained by the medical community are included. (28 references) (KR)

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THE PATHOLOGICAL ETHOS:

LOOKING FOR A RHETORICAL PERSPECTIVE ON SCIENTIFIC FRAUD

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THE PATHOLOGICAL ETHOS:

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In March 1974, William T. Summerlin, a junior researcher at the Sloan-Kettering Institute for Cancer Research, was facing a conference with his lab supervisor. They were going to discuss the inability of other scientists at the Institute to reproduce Summerlin's experimental results with skin grafts on white mice. On the way to that conference, white mice in hand, Dr. Summerlin took a black felt-tipped pen and colored in some spots on the mice. His senior colleague didn't notice the enhanced grafts, but the animal care specialist to whom the mice were later returned did. Two months later, following an extensive investigation that uncovered several other incidents of misrepresentation by Summerlin, Dr. Lewis Thomas, president of Sloan-Kettering, released a formal statement saying, "I have concluded that the most rational explanation for Dr. Summerlin's recent performance is that he has been suffering from an emotional disturbance of such a nature that he has not been fully responsible for the actions he has taken nor the representations he has made." Summerlin was given a year off at full pay to pull himself together.

The February 24, 1977 issue of the British journal Nature contained a letter written by Dr. R. J. Gullis. The letter states in part "I wish to disclose the fact that papers published

in several journals with myself as principal author are not reliable. The curves and values published are mere figments of my imagination, and during my short research career I published my hypotheses rather than experimentally determined results. The reason was that I was so convinced of my ideas that I simply put them down on paper; it was not because of the tremendous importance of published papers to the career of a scientist." The letter went on to retract nine articles and a book chapter.

In the spring of 1977, Elias Alsabti was asked by the Minister of Health to leave Iraq after it was discovered that Alsabti had been touring Baghdad factories collecting fees to screen the workers for cancer. The blood samples were going into the garbage. Alsabti traveled to Jordan, where he secured government backing to get to the United States. Posing sometimes as an MD, sometimes as a PhD, Alsabti gained positions in microbiology labs in highly prestigious schools including Temple, Jefferson Medical College, M.D. Anderson, and Baylor, among others. In each position, he was quickly discovered to be an imposter. In each lab, he snatched manuscripts from the desks of colleagues, changed the bylines of these papers, translated some of them into foreign languages, and submitted them for publication in obscure journals. While many of the papers had already been published, he beat some of the original authors into print. After his months in Texas, Alsabti spent some time at the University of Virginia. In 1980 he ended up in the mecca of

American medical research, Boston. It was while he was affiliated with Boston University that his plagiarism caught up with him. He left his position and America in September 1980. The American medical community still believes that over sixty articles with Alsabti's byline were entirely plagiarized.

Obviously these are three of the more sensational cases of biomedical fraud, and also just the tip of the iceberg. But these cases illustrate why an entire body of literature tying biomedical fraud to the scientific method, to biomedical ethics, and to peer review and publishing practices has appeared over the past fifteen years. Hundreds of articles have been published in biomedical journals, trying to pinpoint the crime of fraud, trying to explain the causes, trying to identify cures.

Biomedical fraud goes far beyond fabricated data, enhanced results, and plagiarism. According to the medical research community that attempts to define the scope of fraud, biomedical fraud includes such phenomena as salami science, which is the practice of dividing a project into a number of brief publications, called least publishable units; autoplagiarism, the practice of writing up the same study in a variety of forms and submitting each; and unjustified authorship, the practice of adding names to the manuscript as "favors." Even sloppy record-keeping contributes to biomedical fraud.

It is only in science where the pursuit of truth is the dominant value, yet biomedical fraud has proliferated in this community. So why did it happen? Medicine as a profession has been hard-pressed to overcome the traditionalism that continues to dominate the views of many of its philosophers. Logical empiricism still rules as the philosophy behind the scientific method in many laboratories throughout the country, whether or not it influences the practice of science. Merton's theory of organized skepticism as a systematic self-corrector of errors and fraud in science brought comfort to many scientists during the first wave of fraud, before the summer of 1980. Many of the editorials published in leading biomedical journals invoke the Mertonian ideal, that the ethos of science will protect medical research over the long haul, that science is pure and the few pathological personalities that have been involved are merely aberrations.

But it became clear, after John Darsee and Robert Slutsky were exposed in the early '80's, that perhaps science can no longer rely on the Mertonian ethos as a comfort. Critics usually don't argue that Merton is wrong, just that his theory of ethos is inadequate to explain real situations. Dr. John Jesseph writes of an ethos loop -- that is, what medicine gives to society causes society to place greater or less trust back in medicine. He says, "Living through the fulfillment or failure of expectations will inevitably lead to changes in view of

individuals and societies, which is their ethos." The extent of biomedical fraud today does not bode well for society's trust in medicine.

Other sociological theories about the scientific method also employ mechanisms to explain biomedical fraud. Kuhn's theory of scientific revolutions and Feyerabend's "nudge" theory suggest to some that fraud is an undeniable component of science. If, as Feyerabend says, all great scientific discoveries come from "nudging" the data along as Ptolemy, Galileo, Newton, and Darwin seem to have done, and if, as Kuhn says, during normal periods, scientists suppress nudging, then why, scientists respond, is all this scientific finagling just now becoming increasingly apparent? And isn't total fabrication of data more than just a nudge? This structural approach has been repeatedly refuted in the scientific literature, for scientists want to believe that science itself is not flawed.

The third model of the scientific method is that of the social constructionists, who say that science is not primarily moral or logical at all, but it's societal, valuational, that science is a process of construction. The constructionists say that nobody actually knows how science is constructed except the scientists involved, and that it is this social structure that keeps science from grinding to a halt. The constructionists say that scientific fraud is part of the process, rather than a

pathology of the person or of science as a whole. Dr. Alvan Feinstein is one of the traditionalists who responds rather negatively to this theory, calling it the "consensus syndrome." He comments that, according to the social constructionists, scientists must now take a vote among colleagues and peer reviewers to find out whether they have a valid conclusion or not. Feinstein dismisses social constructionism as an invention of sociologists who propose it because it validates the belief system of their own field.

So the medical literature as written by practicing biomedical researchers repeatedly refutes the theories of sociologists and philosophers. How do biomedical researchers explain the origins of fraud? For starters, many members of the medical community refer to it as "so-called" fraud or "mismanagement of reporting," blaming the systems upon which science depends rather than science or the individual (Szilagyi). For example, Alsabti's ability to publish plagiarized papers would be a failing of the peer-review system, which is peripheral to science itself. Many point to the peer-review process as the best method of controlling fraud, demanding that more attention be given to the data at the peer-review level. Journal editors are among the first to point out that laboratory duplication of research results is not the task of journal reviewers.

But most members of the biomedical research community do acknowledge the reality of fraud, particularly the peer-reviewers and editors, who take a certain amount of heat over fraudulent publications. These groups have instituted very practical measures to explain and deal with it. One of the often mentioned causes lies in what is termed the "pre-med syndrome." Dr. Robert Petersdorf describes it as "fierce competition in college, excessive emphasis on grades, and the rise of students who become 22-hour a day study-machines." The syndrome was analyzed in the May 1985 issue of The Washington Monthly, which stated, "A recent study of 400 medical students by doctors at two Chicago medical schools revealed that 88% of the subjects had cheated at least once while they were premeds. The researchers found widespread cynicism among their subjects as demonstrated by frequent agreement with statements such as "People have to cheat in this dog eat dog world." The most disturbing finding was that there was a continuum from cheating in college to cheating in medical school to cheating in clerkships and patient care. Cheating in medical school may be a predictor to cheating in practice."

Another cause proposed by the medical community is the large size of science. No more are laboratories a manageable size, closely supervised by the lab director. In these days of multi-million dollar grants and large research groups, training of laboratory researchers is often limited to junior faculty members

without the experience to capably review the results of every experiment.

Finally, competition leads to situations where fraud arises. Competition for grants, for jobs, and for publications is intense in these days of publish or perish tenure requirements. The pressure to publish can be personal or institutional, and, in fact, the ethos of science justifies such institutional pressure, for the community does have a right to see the results of research it has funded. Publishing also offers the opportunity for peer recognition and evaluation, another requisite of the ethos. Competition for grants can be a cycle of defeat, for a researcher must have publications in order to get grants, and a researcher must have grants in order to get publications. Many university scientists, by contract, must raise the majority of their salaries through grants. Competition for both grants and publications is heightened by the need for originality on both fronts. Medical journal editors and funding sources both list originality as the primary factor in publication and funding decisions. Of course this eliminates one of the self-correcting mechanisms of science; studies are no longer routinely and systematically replicated.

Universities, journal editors, and funding agencies have instituted a variety of preventive measures to ensure that biomedical fraud does not touch them. Harvard, for example, has

put a ceiling on the number of papers it will consider for promotion. Researchers must submit a limited number of their best papers and compete on the basis of quality rather than quantity. Harvard has also set guidelines for custodial care of original data. Journals, including JAMA and the New England Journal of Medicine, now require copyright statements signed by each author listed on the manuscript and verifying that all results are valid. Most journals now require authors to attest in writing to their roles on the research and writing team. Grant agencies, particularly federal agencies, have instituted sanctions against researchers and universities involved in fraud. Stephen Breuning became the first scientist federally indicted for fraud in 1988 when he was found to have defrauded the National Institute for Mental Health. The University of Pittsburgh, where he conducted his research, was ordered to pay back his $163,000 grant and he had to reimburse Pitt $20,000. By the way, Breuning's research is probably the only fraudulent research that had the potential to directly affect patient care. His papers recommend the use of a specific drug for a particular mental retardation disorder; the recommendation was based on false samples.

Of course controversy arises in the midst of such divergent philosophies and practices. Critics of Merton say that scientific fraud has proliferated because scientists insisted science was honest and fool-proof, and it's not. Some scientists still insist there is no connection between fraud and medical

ethics, that fraud is due entirely to mental illness. One thing is certain; the biomedical community wants to find its own solutions to fraud. While Congress says scientists have proven they cannot police themselves, scientists are fighting to keep federal bureaucracy out of biomedical research.

The ethos of science has been fractured by 20th century expectations. The post-World War II research boom has been responsible for turning many universities into institutions of research rather than teaching. Today, ego and personal gain have eroded the spirit of communality and disinterest that defined the research community for many years. Today, grants and publications are used primarily for personal evaluation rather than for advancing new knowledge. Perhaps Harvard's John Darsee is the best illustration of this; most of his colleagues agree that he would have had a brilliant research career without cheating. Yet, in 1981, he admitted to publishing dozens of papers based on fraudulent data.

I was at an NIH-sponsored conference on the Integrity of Biomedical Research less than a year ago, and I listened as some of the brightest medical researchers today attempted to explain fraud as an ethical problem, and I watched as they distributed annotated bibliographies of recommended guides for scholarly scientific writing and publishing. No mention was made of the larger framework, the rhetorical framework, that binds ethical

writing to technically-correct writing. Perhaps it is difficult for the medical community to see the big picture, for, quite frankly, many are scrambling for cover while others are looking for someone to blame. Theories regarding the origins of fraud abound in the medical community, yet very little actual research has been conducted.

While it is admittedly not easy to pinpoint the attitudes and practices of scientists who have been involved in fraud, other kinds of studies can be valuable. Systematic investigation of the attitudes of medical students and practicing scientists could yield promising information about the relationship between ethos and writing in actual situations. In addition, the ethological norms of current practice need to be studied and described, particularly in relation to the concept of community in biomedical research. Various ethnographic studies of scientific communities give researchers a basis on which to build, but these studies need to be broadened and furthered to focus on the ethics of writing in medicine and the limits of integrity in biomedical research and publishing. It is in this way that a rhetorical perspective can contribute to a better understanding of biomedical fraud.

Gwendolyn Snodgrass

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